GEOLOGY 3250-3251
INTRODUCTION TO GEOMORPHOLOGY

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Office Hours: 2:00-4:00 M, 2:00-2:50 W, 2:30-4:00 TTh, and by Appointment

by Adrian Harvey, 2012, 124 pages.

Important Journals: Geomorphology, Earth Surface Processes and Landforms,
Zeitschrift fur Geomorphologie, and Quaternary Research

Course Description:

Geology 3250-3251 is an introduction to Geomorphology. Geomorphology is the study of
landforms and the processes that create and modify them. In this course we will examine how
factors such as climate and bedrock type and structure influence landform development.
Landscapes and landforms will be examined through the use of topographic maps, air photos, and
field trips. Emphasis will be placed on geomorphic processes and on the relationships between
properties of Earth materials and the forces applied to them by gravity, tectonics, water, wind,
waves, ice, bio-erosion, and humans. Secondary emphasis will be placed on Methods used to
date Landforms and Geomorphic change in the Quaternary Period (Pleistocene and Holocene
Epochs)

Course Objectives:

1. To learn to interpret the geologic history of an area from observations of the surface morphology.
2. To understand the importance of Earth surface processes in geology and how lives.
3. To be able to know what to do to evaluate the Geomorphology of an area.
4. To be able to read topographic maps and aerial photographs.
5. To be able to interpret surficial and bedrock geologic maps.

Lab: Geomorphology Lab (Geology 3251) will be held on Wednesdays from 3:00 to ~5:50 PM.

Lab exercises and activities will parallel and complement the topics in the lecture portion of
the course. Labs will use aerial photographs and topographic maps and will emphasize
aerial photo analysis of processes and landforms in volcanic, weathering, hill slope, fluvial,
kast, coastal, glacial, periglacial, and aeolian environments. We will also
have a lab or two on weathering and soils. There will be two weekend field trips to
the mountains of North Carolina or Virginia to study hillslope, fluvial, soil formation, and
cost processes and landforms and one to the Outer Banks of North Carolina in September,
October, and/or November. On one or two of these weekend field trips, we may join Dr. Scott
Eaton and his geomorphology class from James Madison University. One or more of these
trips may involve outdoor camping so at some point you will need a tent and sleeping bag!
These items can be rented from the ECU Rec Center if you do have them. However, we may also
stay/slam it in cheap motels, which if you stay 4/5 per room, it will not be that much more
expensive than camping plus we are independent of really cold and/or rainy nights.

There will be no assigned lab on the Wednesdays of the weeks following the field trips.
However, your re-written field notes and sketches and any other assigned activities related
to the field trips will be due by the Wednesday following the field trips. All other Laboratory
assignments will be due on the Wednesday following when it was assigned (7 days).
Assignments must be turned in on time. Some of the laboratory work may have to be
completed outside of the scheduled lab time. The class room and lab room are open whenever
the Graham Building is open. Maps and other materials will be available in the lab or from the
instructor during the following week after which time they will be put away. Air photos and other
photos will be made available on the course web page or distributed via an email distribution list
whenever possible. For grade weighting of the labs, see below.

One or two lab periods will possibly be used for lecture and discussion of previously
uncovered lecture topics or for administering Exams.

Exams: There will be 2 Exams and a Final Exam. The exams will be closed book. However,
Exam Questions will be taken from the Study Guides distributed to students as we cover
Each topical subject in the course. Each Exam will consist of a selected number of terms and
questions and questions from the Study Guides. Thus, you will have a defined framework in
which to focus your exam preparation. For grade weighting of the Exams, see below.

Grades: Your course grade in Geology 3250-3251 will be determined by the following formula:

Laboratory and Field Assignments, Assigned Problems, and Attendance - 25%
Exam 1 - 25%
Exam 2 - 25%
Final Exam - 25%

Week 1 – Introduction to Geomorphology (Chapter 1 and parts of Chapter 6 - Harvey)
    Basic Concepts (Chapter 2)

Week 2 – Weathering and Associated Landforms (Chapter 4 – Harvey, p. 49-56 + selected pages in
    Chapters 2 and 3)
    Long-term Landform Evolution, Erosional Terrains, Denudation Rates, and Residual
    Hills (Inselbergs) (Readings and Diagrams supplied by instructor)

Week 3 – Weathering and Soils (parts of Chapter 4, p. 49-56)
    Use of Paleosols and Duricrusts in Interpreting Quaternary Geomorphic Change
    Supplemental Readings and Diagrams supplied by the Instructor on Soils and Soil
    Classification

Week 4 – Weathering and Associated Landforms (Chapter 4 – Harvey, Selected pages in
    Chapters 2 and 3)
    Hill Slopes and Mass Wasting (Chapter 4, p. 56-65)
    Supplemental Reading and Diagrams for Landslide Classification

Week 5 – Mass Wasting and Landslides continued
    Supplemental Reading and Diagrams for Landslide Classification

Week 6 – Fluvial Systems (Chapter 4 – Harvey, p. 65-79)

Week 7 – Karst Systems and Processes and Landforms (Chapter 4 – Harvey, p. 32-34)

Week 8 – Coastal Systems (Chapter 4 – Harvey, p. 88-96)

Week 9 – Regional-Scale Geomorphology (Chapter 3, p. 31-48)
    Topographic Expression of Folded Strata
    Topographic Expression of Joints and Faults
Week 10 – Volcanic Processes and Volcanic Landforms

Week 11 – Aeolian Landforms and Processes (Chapter 4 – Harvey, p. 79-82)

Week 12 – Glacial Systems (Chapter 4 – Harvey, p. 82-88)

Week 13 – Periglacial Processes and Landforms

Week 14 – Time Scales and Landscape Evolution (Chapter 5 - Harvey)
  Dating Geomorphic Change and Landforms and Late Quaternary Sea Level Change –
  Applications of Carbon-14 (AMS) and Uranium Series (TIMS) (Some Readings supplied
  by instructor)

Week 15 - Final Exam (11-1:30 PM -Wednesday December 16, 2015)